Specific Accreditation Guidance

Legal (including Forensic Science)

Gap Analysis of AS 5388 and NATA accreditation criteria applicable to Legal (including Forensic Science)

January 2018

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For the purposes of this document, all mandatory criteria described in the AS 5388 standards have been included in this document. Where this corresponds to a requirement in any of the NATA assessment criteria this has been included and the clause referenced.

Where requirements are included in the AS 5388 series of standards which have no corresponding current criteria, this will be noted.

Where requirements described in the AS 5388 standards refer directly to an alternative standard (e.g. ISO/IEC 17025), jurisdictional requirements or legislation these have not been included.

NATA considers the mandatory requirements of the AS 5388 standards to be any sentence including the term “shall”. Where the words “should” and “may” have been used, these are considered desirable processes or information included for additional consideration. Whilst these are considered to be the favourable approach, alternatives are available and non adherence to these inclusions will not result in non conformances, provided the approach taken meets the requirements included in the NATA accreditation criteria.

The new documents described below are as follows:

- AS 5388.1 Forensic analysis Part 1: Recognition, recording, recovery, transport and storage of material
- AS 5388.2 Forensic analysis Part 2: Analysis and examination of material
- AS 5388.3 Forensic analysis Part 3: Interpretation
- AS 5388.4 Forensic analysis Part 4: Reporting

These are being reviewed against the following NATA assessment criteria:

- ISO/IEC 17025: 2005 General requirements for the competence of testing and calibration laboratories
- ISO/IEC 17025 Standard Application Document for accreditation of testing and calibration laboratories (SAD)
- Legal (including Forensic Science) ISO/IEC 17025 Appendix

AS 5388.1 FORENSIC ANALYSIS PART 1: RECOGNITION, RECORDING, RECOVERY, TRANSPORT AND STORAGE OF MATERIAL

Requirement	Corresponding NATA criteria	List corresponding policy or procedure (or part thereof)	*NATA Use only* Complies	
			Yes	No
4. Underpinning Principles				
4.1 General				
• Recognition, collection and subsequent management of physical material **shall** be undertaken to ensure recovery is relevant and optimal, integrity is not compromised, potential for contamination is minimized, evidence continuity and security is maintained and the potential for analysis is optimized.	ISO/IEC 17025 5.3.1, 5.3.4			
4.3 Preservation of forensic material				
• Material **shall** be recovered and stored to minimise the risk of loss, deterioration, contamination or alteration, to ensure that the conclusions based on any scientific examination of the material are reliable and verifiable.	ISO/IEC 17025 5.3.1, 5.8.4			
5.2 Scene examination (forensic specialists)				
5.2.1 General				
• The overall approach to recovery **shall** be systematic, objective, and thorough.	ISO/IEC 17025 5.7.1			
• Contemporaneous notes **shall** be taken when attending a scene	ISO/IEC 17025 4.13.2.3			
• The information obtained from first responders and investigating officers **shall** be recorded.	ISO/IEC 17025 4.13.2.1			

Requirement	Corresponding NATA criteria	List corresponding policy or procedure (or part thereof)	*NATA Use only* Complies	
			Yes	No
• Examinations **shall** be carried out in a way that seeks to minimize damage to property.				
• Discarded or used equipment and material **shall** be collected, bagged and removed before leaving the scene and a location for such collection planned in advance.				
• When examining a living person, the health, wellbeing and dignity of the person **shall** be considered.				
• Similarly, the dignity of a deceased person **shall** also be considered.				
5.2.4 Scene management				
• The person in control of the crime scene **shall** be satisfied that all aspects have been satisfactorily completed.	ISO/IEC 17025 5.2.5 Expansion to specify the requirements for the person in control of the crime scene			
6. Occupational Health and Safety				
The NATA assessment process emphasises the importance of safe facility practice, however, the review of health and safety issues during an assessment visit does not constitute a formal health and safety audit. State and Territory authorities are responsible for occupational health and safety in facilities.				

Requirement	Corresponding NATA criteria	List corresponding policy or procedure (or part thereof)	*NATA Use only* Complies	
			Yes	No
7. Recording Material In Situ				
7.2 Notes				
• Notes **shall** be contemporaneous. They **shall** be uniquely identifiable and include sufficient detail to enable the examiner to accurately report a scene location and description, who took the notes and when, who examined what and when, what material was collected and where it was transported, and any known limitations to the examination or collection of material.	ISO/IEC 17025 4.13.2.1, 4.13.2.2 AD 4.13.2.1, 4.13.2.3			
• It **shall** be apparent if any notes and records are altered or have been removed.	ISO/IEC 17025 4.13.2.3 AD 4.13.2.3			
7.4 Photographic recording				
7.4.1 Digital photography				
• Any digital format used **shall** be sufficient to allow accurate representation and recording of the scene	ISO/IEC 17025 5.4.7, 5.5.2 Expansion to specifically refer to recording at a scene			
• Original photographic records **shall** be traceable at all times.	ISO/IEC 17025 4.13.2.1			
• The digital camera, lenses and digital image format **shall** be fit-for-purpose	ISO/IEC 17025 5.4.7.2, 5.5.2			
• The results of validation studies **shall** be recorded.	ISO/IEC 17025 5.4.5.2, 5.4.7.2			

Requirement	Corresponding NATA criteria	List corresponding policy or procedure (or part thereof)	*NATA Use only* Complies	
			Yes	No
7.4.2 Digital image capture				
• Images requiring accurate scale printing **shall** include a visible scale within the frame.				
• The photographic record of the scene **shall** not be deleted from short- term media until after the primary images have been saved to long-term storage media.				
7.4.3 Digital image storage				
• Primary images **shall** be saved on suitable long-term media as soon as is reasonably possible. When there will be an extended period of time prior, then the short-term storage media **shall** be stored appropriately to ensure its integrity. If this occurs then it **shall** be documented.	ISO/IEC 17025 4.13.1.2 5.8.4			
• Where an optical disc is used for original image storage, the readability of the optical disc **shall** be checked prior to storage. The media **shall** be clearly identified and stored so as to ensure the integrity of the digital data. Longevity of data on optical disc storage **shall** be a consideration in relation to image storage.	ISO/IEC 17025 5.4.7.2			
• Where a centralised hard disc drive (HDD) backup is used for original image storage, access and levels of access to those images **shall** be strictly controlled.	ISO/IEC 4.13.1.4			

Requirement	Corresponding NATA criteria	List corresponding policy or procedure (or part thereof)	*NATA Use only* Complies	
			Yes	No
• Enhancement of an original image **shall** not be carried out prior to the image being saved to long-term storage media. Image processing **shall** only be performed on working copies once original images have been safeguarded.	AD 5.8.1			
7.5 Video recording				
• Original analogue tapes **shall** be stored unedited and any edits made on copies. Precautions **shall** be taken to prevent the overwriting of any video images.	ISO/IEC 17025 4.13.1.4 AD 5.8.1			
8. Item Collection				
8.1.1 Collection				
• The examiner **shall** collect the material that is fit for purpose, collect appropriate control and known samples, minimise possible contamination, avoid examining, collecting or recording material that is not relevant to the investigation, consider the potential impact of sampling and place collected material in appropriate packaging. Collection of material **shall** be recorded and continuity of the material ensured.	ISO/IEC 17025 5.7.1 5.8.2, 5.8.4 AD 5.8.1, 5.8.4 Expansion of requirements to include the collection of control and known samples, avoiding collecting non relevant material and the need to consider the impact of sampling			
8.1.2 Collection of physical material from the scene				
• To ensure that physical material is properly collected, the type of examinations **shall** be taken into consideration.	ISO/IEC 17025 5.7.1 AD 5.8.1			

Requirement	Corresponding NATA criteria	List corresponding policy or procedure (or part thereof)	*NATA Use only* Complies	
			Yes	No
• Collection **shall** be fit for purpose.	ISO/IEC 17025 5.7.1 AD 5.8.1			
8.1.3 Minimizing cross contamination				
• Care **shall** be taken to avoid cross contamination between involved persons, victims, physical material, facilities, equipment, the collector and/or scenes	ISO/IEC 17025 5.3.3			
• Victim and suspect samples **shall** be collected separately	ISO/IEC 5.7.1 AD 5.7.1			
• Collection equipment **shall** be discarded after each use. If this is not possible, then the collection equipment **shall** be decontaminated after each use.				
• Appropriate PPE **shall** be worn				
• Facilities in which examinations of persons are conducted **shall** have adequate and documented cleaning policies and procedures, **shall** minimize the number of persons accessing examination areas and **shall** have secure areas for the storage and handling of equipment and samples.	ISO/IEC 17025 5.3.4, 5.3.5 Expansion to specifically refer to examinations of persons			
8.1.4 The use of enhancement techniques at crime scenes				
• When using complex equipment capable of emission over several wavelength ranges, the equipment **shall** be regularly checked for correct operation.	ISO/IEC 17025 5.5.5 Expanded to specifically cover wavelength equipment			
• Reagents **shall** be suitably labelled.	AD 4.6.2			

Requirement	Corresponding NATA criteria	List corresponding policy or procedure (or part thereof)	*NATA Use only* Complies	
			Yes	No
• Suitable control samples **shall** be used to assure the efficacy of the reagents. The efficacy of reagents **shall** be assured prior to use.	ISO/IEC 17025 4.6.2			
• In cases of reagent failure, sufficient details of the reagents and controls **shall** be apparent to allow their batch, origin or manufacture to be traced	ISO 17025 4.13.2.1 AD 4.6.2			
8.1.6 Confirmatory testing at the scene				
• Testing **shall** be carried out by appropriately authorized staff and quality assurance measures **shall** be employed	ISO/IEC 5.2.5, 5.9.1			
8.1.7 Items generated at the scene				
• When a photograph of material is taken and the photograph becomes the forensic evidence, continuity of the image **shall** be maintained. The photograph **shall** be of a suitable quality and fit-for-purpose.	AD 5.8.1			
8.2 Sampling protocols				
8.2.1 General				
• If re-usable implements are used, they **shall** be thoroughly cleaned between each use				
8.2.5 Vacuuming				
• Where vacuuming is used, it **shall** be conducted using a purpose-built sample collection chamber.				
8.2.6 Swabbing				
• Swab kits **shall**, as far as possible, be contaminant free.				

Requirement	Corresponding NATA criteria	List corresponding policy or procedure (or part thereof)	*NATA Use only* Complies	
			Yes	No
• Inorganic components of GSR **shall** be collected directly onto stubs.				
8.3 Deceased persons or remains				
8.3.1 General				
• Deceased persons or remains **shall** be examined in a systematic manner. The environment, position and state of the body, as well as physical damage and injuries, **shall** be recorded.	ISO/IEC 7025 4.13.2.1 Expansion of requirements to refer specifically to deceased persons or remains			
8.3.2 Post-mortem attendance				
• The forensic examiner **shall** maintain close liaison with pathology staff during the post-mortem examination				
• At least one photograph **shall** include the body tag or other unique identifier.				
• Fingerprint impressions **shall** be collected from the deceased remains using an appropriate method.	ISO/IEC 17025 5.4.2			
8.3.3 Exhumations				
• Exhumations **shall** be conducted systematically, using the same practices and considerations as apply with any forensic examination				
8.4 Collection of material from a person				
8.4.1 General				
• When collecting samples or material from a person, deceased or living, a strict protocol of use of PPE **shall** be followed				

Requirement	Corresponding NATA criteria	List corresponding policy or procedure (or part thereof)	*NATA Use only* Complies	
			Yes	No
8.4.2 Biological material				
8.4.2.1 Sexual assaults				
• Examinations of persons associated with sexual assaults **shall** be carried out by qualified and suitably trained medical personnel.	ISO/IEC 17025 5.2.1, 5.2.5			
8.4.2.3 Fingernail trimmings and scrapings				
• Scrapings and trimmings from each hand **shall** be placed in separate containers.	AD 5.8.4 Expansion to specify requirement for fingernails			
8.4.2.4 Hair collection				
• Known samples **shall** be adequate and include both combed and plucked hairs to ensure all growth phases are represented.				
8.5 Packaging and labelling of physical material				
8.5.1 General				
• The principles of preservation and minimizing the risk of alteration or contamination **shall** be considered when packaging and labelling forensic material. The material **shall** not be packaged in a way that inhibits subsequent analysis and handling **shall** be minimized before analysis.	ISO/IEC 17025 5.8.1 AD 5.8.4 Expansion to describe minimal handling before analysis			
8.5.2 Packaging of forensic material				
• Any hazardous samples collected **shall** be placed in a sample container appropriate for the material and **shall** be marked with an appropriate warning label				

Requirement	Corresponding NATA criteria	List corresponding policy or procedure (or part thereof)	*NATA Use only* Complies	
			Yes	No
• Each item **shall** be individually packaged in an appropriate container and sealed as soon as possible.	AD 5.8.1, 5.8.4 Expansion to detail "as soon as possible"			
• Each item package **shall** be individually labelled with a unique identifier;	AD 5.8.2			
• Markings **shall** be made using indelible ink/permanent marker.	SAD 4.13.2.1			
• Items **shall** not be handled unnecessarily.				
• The area of the item that is subject to examination **shall** be protected from loss, deterioration or contamination by appropriate use of packaging and an appropriate seal or cover.	ISO/IEC 17025 5.8.4 AD 5.8.4			
8.5.3 Inappropriate packaging				
• The integrity of the evidence **shall** be assessed to determine whether it has been compromised. Any report produced **shall** include a description of the inappropriate packaging				
• If accepted by the forensic facility, the submitted material **shall** be sealed within appropriate new packaging. The original packaging **shall** be retained or its condition suitably described in the case notes.				
8.5.4 Labelling of forensic material				
• The outermost packaging of all items **shall** bear a unique identifying label which allows the chain of custody to be tracked. The chain of custody of all items **shall** be complete and unedited.	AD 5.8.1, 5.8.4 NATA requirements refer to the activities over which the facility has control			

Requirement	Corresponding NATA criteria	List corresponding policy or procedure (or part thereof)	*NATA Use only* Complies	
			Yes	No
• The label **shall** alert the handler to any hazards associated with the item and **shall** allow details to be retrieved. The label **shall** include a description of the item, whether the item contains any hazard, the location the item was collected from, the date the item was collected, the name or identifier of the officer and the case file or investigation the item relates to.	AD 5.8.1 Expansion to detail hazards associated with the item, description of item location, date and identification of officer involved			
• Labels **shall** be placed on the side of a container, not on a container's lid	AD 5.8.1			
9. Item transport, Storage and Security				
9.1 General				
• Facilities **shall** have documented acceptance and rejection criteria. The criteria **shall** cover the requirements for packaging, transport and storage of forensic material.	AD 5.8.1, 5.8.4 Expansion to specifically describe the need for acceptance/rejection criteria			
9.3 Item continuity				
• Continuity of possession **shall** be maintained and recorded between sampling at the scene and acceptance for analysis by the facility.	Additional Requirement NATA requirements cover only those movements under the control of the facility			
• The movement of items after acceptance by the forensic facility **shall** be managed via an item management system. The location of an item **shall** be known by the storage location or the forensic officer	AD 5.8.1			

Requirement	Corresponding NATA criteria	List corresponding policy or procedure (or part thereof)	*NATA Use only* Complies	
			Yes	No
9.4 Security of items in storage				
• Access to forensic storage areas **shall** be by authorized personnel only.	AD 5.3.4			
9.5 Specific transport and storage requirements				
9.5.2 Biological material				
• Items that may deteriorate due to exposure to moisture **shall** be dried or frozen prior to storage.	ISO/IEC 17025 5.8.1 Expansion to specify the need to dry or freeze samples			
• All refrigerators, cool rooms and freezers used for forensic purposes **shall** be monitored and recorded regularly or equipped with a temperature alarm.	ISO/IEC 17025 5.5.5			
9.5.3 Deceased persons or remains				
• Storage of bodies, samples and/or body parts **shall** be maintained at a temperature between approximately +2 to +6°C.	ISO/IEC 17025 5.8.1 Expansion to specify temperature for storage of bodies			
9.5.5 Entomological material				
• Live material **shall** be transported in a ventilated container and stored in such a container in a refrigerator (between +4 and +6°C)	ISO/IEC 17025 5.8.1 Expansion of transport requirements specifically for entomology			
• The growth chamber **shall** be located in a secure, restricted access area.	AD 5.8.4			

Requirement	Corresponding NATA criteria	List corresponding policy or procedure (or part thereof)	*NATA Use only* Complies	
			Yes	No
9.5.6 Chemical material				
• Samples of corrosive material may be collected. Any such samples **shall** be representative of the whole. The relevant facility **shall** have written protocols to ensure adequate sampling.	ISO/IEC 17025 5.7.1 AD 5.7.1 Expansion to specifically refer to corrosive material			
9.5.8 Fire debris				
• Fire debris **shall** be transported in sealed containers and the storage environment **shall** be separate from possible sources of ignitable liquid contamination and the storage environment **shall** be suitably ventilated to avoid any build-up of volatile compounds from the samples being stored.				
9.5.10 Firearms				
• Firearms **shall** be rendered safe prior to being packaged and transported to an appropriate facility				
• When a firearm item is received by the facility, it **shall** be checked by an appropriately trained person prior to storage to ensure that the firearm is not loaded.	ISO/IEC 17025 5.2.2			

AS 5388.2 FORENSIC ANALYSIS PART 2: ANALYSIS AND EXAMINATION OF MATERIAL

Requirement	Corresponding NATA criteria	Evidence (outcome of discussions with staff; observations; procedures & documentation reviewed)	Complies	
			Yes	No
4. Underpinning Principles and Requirements				
4.2 Procedures				
• The procedures involved **shall** be defined and carefully controlled to minimise the risk of inadvertent contamination, alteration or destruction and to ensure that the analytical results obtained are reliable	ISO/IEC 17025 5.4.1 Expansion to detail contamination, alteration and destruction			
• All procedures conducted….**shall** be documented and shown to be fit for purpose prior to the application unless delay would jeopardize any subsequent analysis or impact on personal safety or national security	ISO/IEC 17025 5.4.1 Expansion to include the need for immediate testing prior to validation/verification			
4.3 Training and competency				
• Persons **shall** have undertaken appropriate training and have been assessed as competent to carry out the examination. Ongoing • competence **shall** be demonstrated	ISO/IEC 17025 5.2.1, 5.2.2, 5.2.5 AD 5.2.2			
• Full records of training, assessment and ongoing competence **shall** be maintained	ISO/IEC 17025 5.2.5 AD 5.2.5			
4.4 Instrumentation				
• The proper functioning of the instrumentation and its software **shall** be documented along with proof of continuing proper function	ISO/IEC 17025 5.4.7.2, 5.5.3, 5.5.5			
• Instrumentation used in comparative techniques **shall** be fit for purpose	ISO/IEC 17025 5.5.2			

Requirement	Corresponding NATA criteria	Evidence (outcome of discussions with staff; observations; procedures & documentation reviewed)	Complies	
			Yes	No
5. Acceptance of Physical Material Received for Examination				
5.1 Acceptance and rejection of physical material for analysis				
• There **shall** be written criteria for the acceptance or rejection of material for examination	ISO/IEC 17025 5.8.1 Expansion to specifically detail the need for criteria			
• If the facility varies its criteria, then the facility **shall** advise clients of any limitations or qualifications that may ensue	ISO/IEC 17025 5.8.3			
• The facility **shall** have procedures for vetting casework	ISO/IEC 17025 5.8.1 Expansion to specifically detail vetting casework			
• Materials **shall** be stored under tamper-evident seals.	AD 5.8.4			
6. Item Continuity				
6.1 Item management system				
• Movement of items between forensic disciplines **shall** be managed by an item management system. The location of an item **shall** be known by the storage location or the forensic officer	ISO/IEC 17025 5.8.2, 5.8.4 AD 5.8.4 Expansion to describe specific requirement for an item management system to record sample tracking outlining the function of the system			

Requirement	Corresponding NATA criteria	Evidence (outcome of discussions with staff; observations; procedures & documentation reviewed)	Complies	
			Yes	No
• The item management system **shall** be robust and auditable, and include a unique identifier, a brief description of each individual item, the movement of each item, records of chain of custody, records of the actual holder of an individual item, the storage location and records of any changes made	Additional Requirement			
• The system **shall** record sub-sampling and maintain a link	ISO/IEC 17025 5.8.2			
• The system **shall** record the movement of items out of the forensic facility				
6.2 Security of Items in Storage				
• Access to forensic storage areas **shall** be by authorised personnel only	AD 5.3.4, 5.8.4			
6.3 Security of Items During Examination				
• When not under examination, items **shall** be stored in a secured storage area	AD 5.8.4			
• Items that are undergoing extended examination **shall** be stored within a secure examination area	AD 5.8.4 Expansion to describe extended examinations that items shall not be left unattended			
• While under examination, items **shall** not be left unattended without appropriate measure to protect against contamination and to maintain integrity of the items.	AD 5.8.4			

Requirement	Corresponding NATA criteria	Evidence (outcome of discussions with staff; observations; procedures & documentation reviewed)	Complies	
			Yes	No
• Where physical material is destroyed during or at the completion of examination, the reason **shall** be recorded.				
8. Recording Physical Material Received for Examination				
8.2 Note taking				
• Notes **shall** be permanent and the identity of the note taker and case manager **shall** be apparent as well as when the notes and any alterations were made.	ISO/IEC 17025 4.13.2.1 AD 4.13.2.1 Expansion to specify the need for the case manager to be included			
8.3 Photography				
• Photographic records and equipment **shall** be fit for purpose	ISO/IEC 17025 4.13.1.2, 5.5.2			
• Any photographs **shall** be appropriately filed	ISO/IEC 17025 4.13.2.1 AD 4.13.2.1			
• A mechanism for recording the date when images were taken **shall** be used….and **shall** be fit for purpose	ISO/IEC 17025 4.13.2.1 Expansion to specify recording of the date			
8.4 Weighing and measuring physical material				
• Any equipment and software used **shall** be fit for purpose and appropriately calibrated and maintained.	ISO/IEC 17025 5.4.7.2, 5.5.2			
• The facility **shall** have policies on the rounding of numerical values and the use of significant figures.	SAD 4.13.2.1 Expansion to require a policy on rounding			

Requirement	Corresponding NATA criteria	Evidence (outcome of discussions with staff; observations; procedures & documentation reviewed)	Complies	
			Yes	No
9. Presumptive and Preliminary Tests				
• Presumptive or preliminary tests **shall** follow current written methods. Reagents used and results obtained **shall** be properly noted and any equipment used **shall** be properly maintained	ISO/IEC 17025 4.13.2.1, 5.4.2, 5.5.2			
• Where reference materials/standards and control samples exist, they **shall** be used to help assure the accuracy and/or reliability	ISO/IEC 17025 5.9.1 AD 5.9.1			
10. Order of Examination				
10.1 General				
• Any significant variations from usual procedure **shall** be noted in case notes along with the reasons	ISO/IEC 17025 5.4.1 Expansion to require this to be recorded in case notes			
10.2 Preservation of evidence				
• The order of examination **shall** be planned and implemented so as to ensure that non-destructive techniques are given priority and conducted before any destructive techniques are attempted.	ISO/IEC 17025 5.8.4 Expansion to specify non-destructive techniques prior to destructive techniques			
10.4 Special consideration				
• The collection of physical material **shall** comply with all relevant national and jurisdictional laws and regulations.				

Requirement	Corresponding NATA criteria	Evidence (outcome of discussions with staff; observations; procedures & documentation reviewed)	Complies	
			Yes	No
11. Sampling				
11.2.1 Material to be analysed may be apparent but not in a form suitable for analysis				
• Materials **shall** be transformed into a form suitable for analysis	ISO/IEC 17025 5.8.4 Expansion to specify transformation of material			
11.2.2 Material to be analysed may be visible but a choice must be made between one or more possible areas of material of interest				
• Material **shall** be sampled after consideration of relevant case information	ISO/IEC 17025 5.7.1			
11.2.3 Instrumental methods must be used to obtain material suitable for analysis				
• Materials **shall** be transformed into a form suitable for analysis	ISO/IEC 17025 5.8.4 Expansion to specify transformation of material			
11.3.3 Sampling from a population				
• If there are different groups of external characteristics, they **shall** be separated into as many groups as dissimilarities. Each group **shall** be considered as a whole population and **shall** be sampled separately.	ISO/IEC 17025 5.7.1 Expansion to specify grouping for sampling plans			
• When examining enclosed material, if differences are subsequently observed in the appearance of the contents, the sampling procedure **shall** be stopped and the sampling rule **shall** be re-applied prior to proceeding with the examination.	ISO/IEC 17025 5.7.1 Expansion to revisit sampling plan based on observations			

Requirement	Corresponding NATA criteria	Evidence (outcome of discussions with staff; observations; procedures & documentation reviewed)	Complies	
			Yes	No
11.4 Sub-samples				
• If not immediately analysed, sub-samples **shall** be properly packaged, labelled and be able to be linked to the original sample from which it was collected.	ISO/IEC 17025 5.8.2			
• The collection of a sub-sample **shall** be recorded in the examiner's notes	ISO/IEC 17025 5.7.3 Expansion to specify recording in examiners notes			
12. Analysis and Examination of Physical Material				
12.2.2 Collection and assessment of data				
• The analyst or examiner **shall** assess the material to determine whether it is suitable and sufficient for the testing or comparison required. The analyst or examiner **shall** assure that relevant reference material and control samples are available, for testing and comparison purposes.	ISO/IEC 17025 5.8.3, 5.9.1			
12.2.3 Formulation of hypothesis				
• Where the hypothesis is not clearly defined, the analyst and the investigator **shall** maintain communication to ensure that no relevant aspect of the case is overlooked and to avoid unnecessary work.	ISO/IEC 4.7.1			
12.2.4 Hypothesis testing				
12.2.4.1 General				
• Tests and examinations **shall** be carried out as specified in the relevant methods and in a controlled environment.	ISO/IEC 17025 5.4.2			

Requirement	Corresponding NATA criteria	Evidence (outcome of discussions with staff; observations; procedures & documentation reviewed)	Complies	
			Yes	No
• Where it has a possible influence on a test outcome, any variation in the test environment **shall** be recorded.	ISO/IEC 5.3.2			
• Where testing involves the comparison of unknown material with material from a known source or person, the material from that known source **shall** be sufficient for the required comparison and its provenance **shall** be properly documented	ISO/IEC 17025 5.9.1 Expansion to specify requirements for known comparisons			
12.2.4.2 Observations				
• Where the technique provides a recorded result, such records **shall** be retained	ISO/IEC 17025 4.13.2.1			
• Where the technique requires observations these **shall** be objective, verifiable, comprehensive, and complete				
• Observations **shall** not draw on any assumptions, prejudices, or preconceptions.				
12.2.4.3 Calculations and data transfer				
• All automated calculations that do not already form part of a validated process **shall** be independently validated or verified as required.	ISO/IEC 17025 5.4.7.2			
• Written calculations and data transfers **shall** be checked	ISO/IEC 17025 5.4.7.1			
• Sole practitioners **shall** check all calculations and data transfers themselves at a time other than the time of transfer	ISO/IEC 17025 5.4.7.1 Expansion to describe specific sole practitioner issues			
• The number of significant figures used **shall** reflect the precision of the instrumentation used.	ISO/IEC 17025 5.5.2 Expansion to specify significant figures			

Requirement	Corresponding NATA criteria	Evidence (outcome of discussions with staff; observations; procedures & documentation reviewed)	Complies	
			Yes	No
12.3 Validation and verification of analytical and comparative methods				
12.3.1 General				
• Methods used **shall** be accepted within the relevant field or supported by data gathered and recorded in a systematic fashion	ISO/IEC 17025 5.4.2 AD 5.4.2			
• Procedures previously validated in the facility or elsewhere **shall** be verified as fit for purpose under the new conditions. Minor modifications **shall** require limited verification	ISO/IEC 17025 5.4.5.2 AD 5.4.5			
• Where computer software is used independently of other equipment for testing, it **shall** be validated or verified prior to being put into service. • Any updates to the software **shall** be verified prior to being put into service. Any changes to parameters under which the software is applied **shall** require the software to be verified for that specific use.	ISO/IEC 17025 5.4.7.2			
12.4 Calibration				
• Facilities **shall** identify critical items of equipment	ISO/IEC 17025 5.5.2			
• Facilities **shall** establish a calibration and maintenance schedule for critical equipment	ISO/IEC 17025 5.5.6, 5.6.2.2.1			
• Records **shall** be kept of all maintenance, servicing and calibration of equipment.	ISO/IEC 17025 5.5.5			
• Calibration of equipment by external service providers **shall** be conducted by accredited service providers, where possible	SAD 5.6.1			

Requirement	Corresponding NATA criteria	Evidence (outcome of discussions with staff; observations; procedures & documentation reviewed)	Complies	
			Yes	No
• Records of calibration **shall** be maintained either on the equipment or in an accessible location	ISO/IEC 17025 5.5.5			
12.5 Measurement Uncertainty (MU)				
• Test results **shall** be traceable to stated references through documented chain of calibrations	ISO/IEC 17025 5.4.6.2			
• MU **shall** be included in methods as well as statistical techniques for analysis of test and/or calibration data	ISO/IEC 17025 5.4.1, 5.4.6.2			
• When estimating MU, all components of importance in the analysis **shall** be taken into account. Major sources of uncertainty **shall** be documented along with the overall uncertainty, with an explanation of how this was derived.	ISO/IEC 17025 5.4.6.2			
12.6 Reference standards				
• A register of reference standards **shall** be maintained				
• A designated person **shall** hold appropriate licenses and **shall** ensure the integrity of the reference standards. The designated person **shall** be responsible for the contamination prevention, secure storage etc.				
• If used beyond the expiry date, reasons **shall** be documented.	AD 4.6.2 Expansion to specify use beyond expiry date			
12.7 Reference collections and databases				

Requirement	Corresponding NATA criteria	Evidence (outcome of discussions with staff; observations; procedures & documentation reviewed)	Complies	
			Yes	No
• Facilities **shall** utilise reference collections in the identification, comparison or interpretation of physical material	ISO/IEC 17025 5.9.1 FAD 5.9.1			
• Reference collections and databases s**hall** include documentation detailing the provenance of the material	ISO/IEC 17025 4.6.3			
• Consideration **shall** be given to the minimization of possible contamination of reference material	ISO/IEC 17025 5.6.3.1 Expansion to specify contamination			
• Where the reference collection or database comprises electronic records, the version number or date last updated **shall** be recorded	ISO/IEC 17025 4.13.1.4 Expansion to specify version or date updated for electronic records			
13. Identification of Physical Material by Instrumental Analysis				
13.3 Sample preparation				
• Appropriate measures **shall** be taken during preparation to preserve the sample, prevent contamination and maintain sample integrity	ISO/IEC 17025 5.4.1, 5.8.1			
• Where the technique has been validated for a particular concentration range, the concentration of the solution **shall** be within that range.	ISO/IEC 17025 5.4.1, 5.4.2			
• Any chemical treatment which alters the material **shall** only be performed after consideration of any other examinations which may be required. Validated/verified procedures **shall** be followed.	ISO/IEC 17025 5.4.2, 5.8.1 Expansion to specify chemical treatment			

Requirement	Corresponding NATA criteria	Evidence (outcome of discussions with staff; observations; procedures & documentation reviewed)	Complies	
			Yes	No
• Where compounds need to be converted into another chemical form prior to analysis, a validated procedure **shall** be followed.	ISO/IEC 17025 5.4.2			
• Where components require extraction from a mixture, the extraction procedure **shall** be validated or be part of a validated procedure	ISO/IEC 17025 5.4.2			
13.5.2 Analytical detectors				
• The separation technique employed **shall** be selected according to the efficiency of the technique and the suitability of the detector for measuring the compounds of interest	ISO/IEC 17025 5.4.2			
• The separation and detection technique employed **shall** be capable of separating and detecting the compounds of interest in the analyte mixture to which it is being applied. This **shall** be determined by appropriate validation or verification	ISO/IEC 17025 5.4.5.2			
13.5.3 Chromatographic reference test mixtures				
• A reference test mixture **shall** be run on an appropriate basis on the same instruments and under the same conditions to ensure that reliable results are obtained from the analytical processes	ISO/IEC 17025 5.9.1			
• A test mixture **shall** consist of specified compounds covering a range of compounds of interest. Each component of the test mixture **shall** be detected by the chromatographic system	ISO/IEC 17025 5.9.1 Expansion to describe specific requirements for chromatographic analysis			
13.6 Confirmation of identification				
• At least one technique of high selectivity for the material being examined **shall** be used				

Requirement	Corresponding NATA criteria	Evidence (outcome of discussions with staff; observations; procedures & documentation reviewed)	Complies	
			Yes	No
• Presumptive techniques that are used to identify classes of compounds, or have low specificity giving rise to potential 'false positive' results, **shall** not be used as confirmatory identification techniques.				
13.7 Quantification				
13.7.1 General				
• The instrumental response over the concentration range applied to quantification **shall** be defined	ISO/IEC 17025 5.4.1			
13.7.2 Standard preparation				
• Equipment used in the preparation of the standards **shall** be fit for purpose	ISO/IEC 17025 5.5.2			
13.7.3 Standard curves				
13.7.3.1 General				
• Graphs of the fitted data and residuals **shall** be plotted and inspected to confirm the relationship and check for outliers…..the concentration range covered by the method **shall** be restricted to the linear range				
13.7.4 Calculations				
• Two replicate samples **shall** be analysed and the variation between the calculated quantities **shall** be within defined limits. Should the calculated quantities fall outside the defined limits, the analysis **shall** be repeated. No quantity **shall** be reported until consistent results are achieved.				

Requirement	Corresponding NATA criteria	Evidence (outcome of discussions with staff; observations; procedures & documentation reviewed)	Complies	
			Yes	No
14. Identification of Physical Material Using Comparative Examination				
14.2 Comparative testing to determine the type of material under examination				
• Databases and/or keys comprising known exemplars **shall** be suitably validated or verified.	ISO/IEC 17025 5.4.7.2			
16. Recording the Results of Observations, Analysis and Comparisons				
• The facility **shall** have written procedures that determine the format of its case files.				
• The case file **shall** contain sufficient detail to enable continuity of items received and details of all testing carried out and results obtained	ISO/IEC 17025 4.13.2.1 AD 4.13.2.1			
• There **shall** be only one original case file whatever its format.				

AS 5388.3 FORENSIC ANALYSIS PART 3: INTERPRETATION

Requirement	Corresponding NATA criteria	Evidence (outcome of discussions with staff; observations; procedures & documentation reviewed)	Complies	
			Yes	No
4. Underpinning Principles and Requirements				
• Forensic science **shall** conform to the general attributes of science in that it **shall** be testable, reproducible, explanatory, predictive and dynamic.				
5. Transforming Data into Information				
5.1 General				
• When transforming data into information the data **shall** be systematically and thoroughly evaluated.				
• The criteria used to assist in defining what constitutes an inclusion/exclusion, **shall** be documented.	ISO/IEC 17025 5.4.1 AD 5.4.1			
5.2 Statistical analysis				
• Where quantitative and/or semi-quantitative testing includes statistical analysis, the processes **shall** be documented.	ISO.IEC 17025 5.4.1			
• Assessments of measurement uncertainty s**hall** be used.	ISO/IEC 17025 5.4.6.2			
• Where results from a sample of the population are extrapolated to cover the whole population, the statistical approach used **shall** be documented. The 'confidence levels', or 'credible intervals', for the extrapolation **shall** be calculated and recorded. The use of confidence levels and/or credible intervals **shall** be				

Requirement	Corresponding NATA criteria	Evidence (outcome of discussions with staff; observations; procedures & documentation reviewed)	Complies	
			Yes	No
documented.				
• Databases used to derive estimates for the likelihood of any hypothesis **shall** be relevant for the intended purpose.	ISO/IEC 17025 5.4.7.2 Expansion to cover likelihood of hypothesis			
5.4 Event/Process reconstruction				
• The practitioner **shall** consider the context information. Any alternative explanations that may emerge during the investigation process **shall** also be considered.	AD 4.13.2.1			
6. Review of Information				
There **shall** be a review of information	AD 4.13.2.1, 5.9.1			
Procedures **shall** be documented and **shall** specify the proportion and type of examinations, how and when a review is conducted and recorded and the principal responsibility for the information is retained by the primary practitioner.	AD 4.13.2.1, 5.9.1			
7. Interpretation of Information				
7.1 General				
• Where information requires interpretation in the context of the case, an opinion **shall** be derived and reported.	ISO/IEC 17025 5.10.5			
7.2 Interpretation				
• Interpretation of results **shall** be based on all relevant results, supported by the data, and relevant to the forensic issues in question.	ISO/IEC 17025 5.10.5 Expansion of information relating specifically to the Forensic discipline			

Requirement	Corresponding NATA criteria	Evidence (outcome of discussions with staff; observations; procedures & documentation reviewed)	Complies	
			Yes	No
8. Formulating an Opinion				
8.1 General				
• Opinions **shall** be based on professional judgement.	ISO/IEC 17025 5.2.5			
• The basis of all opinions **shall** be evident to all similarly trained and experienced practitioners.	AD 4.13.2.1			
• The approach used to estimate probability **shall** be applicable to the type of examination or test being conducted. The particular approach used **shall** be stated in their report.				
9. Review of Opinions				
• Opinions s**hall** be reviewed	AD 5.9.1			
• There **shall** be policies that cover the review of opinions and these policies **shall** be documented.	ISO/IEC 17025 5.10.5 AD 5.9.1			

AS 5388.4 FORENSIC ANALYSIS PART 4: REPORTING

Requirement	Corresponding NATA criteria	Evidence (outcome of discussions with staff; observations; procedures & documentation reviewed)	Complies	
			Yes	No
5. General Provisions				
• The author of the report **shall** be concerned solely with reporting results and opinions based on forensic examinations	ISO/IEC 17025 5.10.1			
• All reports **shall** be fit for purpose	ISO/IEC 17025 5.10.1			
• Where prior review of a report is not possible, the report **shall** contain an appropriate caveat				
• This standard applies to testimony given in a judicial setting				
• The author **shall** not derive any benefit that is dependent on specific results obtained or opinions formulated in an investigation, or provided in conjunction with any court proceeding and services **shall** not be provided on a contingency basis				
6. Case File Review				
6.1 General				
• There **shall** be documented policies on the proportion of case files requiring technical and administrative reviews	AD 5.9.1			
• The identity of the reviewer **shall** be recorded	AD 5.9.1			
6.2 Technical review				
• Technical review **shall** include all observations, results and opinions in the case notes	AD 5.9.1			

Requirement	Corresponding NATA criteria	Evidence (outcome of discussions with staff; observations; procedures & documentation reviewed)	Complies	
			Yes	No
• Evidence of the review **shall** be maintained	AD 5.9.1			
• All technical reviews **shall** be completed by a peer or authorised person	AD 5.9.1			
• Where technical reviews are not possible, the report **shall** contain a disclaimer that the review was not carried out				
• There **shall** be documented policies on reporting findings where a dispute between examiner on the evaluation of data or observations or interpretation of results	AD 5.9.1			
• Disagreement between reviewer and examiner **shall** be recorded	AD 5.9.1			
• The final decision on reported findings **shall** rest with the examiner provided all procedures were followed and this has been approved by the facility director	AD 5.9.1 Expansion of requirements to describe approval by Facility Director			
• A technical review **shall** not shift responsibility for the scientific findings; however, the reviewer **shall** share responsibility for the findings they endorse.	AD 5.9.1			
8. Issue and Control of Reports				
8.1 Issuing of reports				
• There **shall** be documented procedures for the issuing of reports	AD 5.10.1			
• A copy of all reports issued **shall** be retained	ISO/IEC 17025 4.13.2.1 AD 5.10.1			

Requirement	Corresponding NATA criteria	Evidence (outcome of discussions with staff; observations; procedures & documentation reviewed)	Complies	
			Yes	No
• Summaries of oral reports and electronic communications **shall** be retained in the case file	ISO/IEC 17025 5.10.7 Expansion to require this retention in the case file			
• The intended use of any report **shall** be clearly communicated				
8.2 Control of reports				
• Facilities **shall** be able to demonstrate appropriate control over distribution of original copies of hard copy reports.				
• Clients **shall** be advised of any changes made to a report				
• Alterations made to original hard copy reports **shall** be evident	ISO/IEC 17025 5.10.9			
• Electronic generation, access, storage and back-up of reports **shall** be appropriately controlled	ISO/IEC 17025 5.10.7 SAD 5.10.7 AD 5.10.1			
• Reports **shall** be issued in a protected format when accessed from a website or reports are sent as electronic communications	SAD 5.10.7			
• Any information normally included in a hard copy report **shall** be included on electronic versions	ISO/IEC 17025 5.10.7 SAD 5.10.7			

Requirement	Corresponding NATA criteria	Evidence (outcome of discussions with staff; observations; procedures & documentation reviewed)	Complies	
			Yes	No
9. Report Contents				
9.1 General				
• All written reports **shall** include the date of issue, name of facility, unique identifier, person responsible, a means of ensuring each page is part of the report and a means of identifying the end of the report	ISO/IEC 17025 5.10.2 AD 5.10.2			
• Reports issued for a primary purpose other than legal proceedings **shall** be appropriate to their purpose				
• Reports **shall** include only information, results and opinions based on information detailed in the case notes or records	AD 5.10.2			
• The use of emotive language that could imply bias **shall** be avoided				
• Subsequent reports **shall** reference previous issued reports	ISO/IEC 17025 5.10.9			
• Analytical data or observations **shall** be reported by a qualified person and **shall** be accompanied by appropriate interpretation	ISO/IEC 7025 5.2.5, 5.10.2 AD 5.10.2			
• Reports **shall** contain relevant facts and results as derived by the examiner based on evaluation and/or observation which **shall** be reported accurately, clearly and unambiguously	ISO/IEC 17025 5.10.1			
9.2 Collection and continuity of forensic material				
• Factual information relevant to attendance at crime scenes, with details of examination and recording of such scenes **shall** be reported unambiguously	AD 5.10.2			

Requirement	Corresponding NATA criteria	Evidence (outcome of discussions with staff; observations; procedures & documentation reviewed)	Complies	
			Yes	No
• Details of the lodgement or retention of collected items and of any images taken at the scene and retained **shall** be included in the report, an accompanying report or otherwise traceable	ISO/IEC 17025 5.10.3.2			
• Any deviations from documented procedures **shall** be stated in the report or relevant case notes	ISO/IEC 17025 5.4.1, 5.10.3.1			
• The date of receipt of items for examination and/or comparison **shall** be stated in the report	ISO/IEC 17025 5.10.2			
• A description of each items **shall** be included in the report such that each item is unambiguously identifiable	ISO/IEC 17025 5.10.2, 5.10.3.2			
• For quantitative testing, the number of significant figured reported **shall** be no greater than warranted by the precision of the instrumentation used				
9.5 Reporting of opinions				
• Opinions **shall** be differentiated from other sections of the report	ISO/IEC 17025 5.10.5			
• The author of an opinion **shall** take into account all relevant observations and results				
• The author **shall** consider only those observations, analyses or facts directly related to or resulting from the examinations				
• If requested to evaluate the results of their examinations in a particular context, then the context and the circumstances of the request **shall** be clearly stated in the report	ISO/IEC 17025 5.10.3			

Requirement	Corresponding NATA criteria	Evidence (outcome of discussions with staff; observations; procedures & documentation reviewed)	Complies	
			Yes	No
• The term "consistent with" **shall** not be used without a qualifying statement suggesting the weighting to be given to the opinion				
• There **shall** be documented policies on the reporting of opinions based on qualitative and quantitative data and results	ISO/IEC 17025 5.10.5			
10 Report Review				
• There **shall** be documented procedures for report review, withdrawal of invalid reports and report retention	ISO/IEC 17025 4.13.1.2 AD 5.10.2			
11 Testimony and Testimony Review				
• There **shall** be a documented system of testimony monitoring	AD 5.2.5			
• The person conducting and the date of the evaluation **shall** be noted on the review	AD 5.2.5			
• Moot court or review of transcripts may be used but **shall** not be the only source used.	AD 5.2.5 Expansion that additional review mechanisms are required			